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ABSTRACT

At Tallahassee Community College (TCC), a full-time equivalent (FTE) based ratio was used as the basis for comparing the college's staff allocations with those of other community colleges in the state. The development of a statewide personnel database by the Florida State Board of Community Colleges provided the means for investigating this ratio. In 1991, a correlation study was undertaken with the underlying premise that the FTE-based ratio was not the best measure for all categories of employment. The correlation between a college's FTE and the number of individuals in the various staff categories of the personnel database indicated that the use of the FTE/staff ratios did not provide a consistent ranking across all 10 activity codes (i.e, categories of employment). However, the correlations exhibited by FTE did indicate a strong relation to all phases of the college. The use of other indicators produced a new set of correlation values, with the indicator "budget" providing the greatest correlation values, but the new indicators did not yield any significant narrowing of ranks across the 10 employment categories used in the personnel database. These results led to the identification of a new set of colleges to serve as a comparison group for TCC. This new set of peer colleges will be tracked over time in order to determine the stability of the relationships observed. The study concluded that the extra time and effort involved in developing a complex set of ratios to replace the FTE-based ratios did not appear justified. (JMC)

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Using the Personnel Data Base as a Source of Staffing Comparison Information

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Using the Personnel Data Base as a Source of Staffing Comparison Information

I. Purpose

The purpose of this study was to review one aspect of allocating staffing positions at Tallahassee Community College and to recommend revisions to that process if necessary. The data used were provided by the State Board of Community Colleges and were based upon the Fall 1990 submission of the Personnel Data Base. The research questions were concerned with the use of a full-time-equivalent (FTE) based ratio when comparing different types of personnel employment and the use of an FTE based peer group for comparison tracking.

II. Introduction

The institutional researcher has often been requested to provide comparative information from other colleges concerning the current staffing levels for various personnel categories. This information was used by the institutional leadership in providing a balance to the personnel requests of the various areas and departments found on the typical college campus. One of the more common methods of obtaining these data has been to survey other colleges that the administration felt were similar. The survey might be formal in nature or just an informal telephone call to a colleague. This has led to varying levels of usefulness since the survey was often limited to a small sample of colleges that the institutional researcher had personal contacts with or those colleges that were willing to return the requested information.

The budget preparations that occurred in Florida during Spring 1991 were developed under very tight fiscal constraints. The anticipation of low levels of State funding put additional pressure on the administration to add only those positions that could be truly justified. As part of this position justification process, the Office of Institutional Research at Tallahassee Community College was asked to provide comparative staffing information for selected areas of the college.

Source of Information

In the past, the Tallahassee Community College Institutional Research Office would have contacted approximately eight other colleges in the Florida system and asked for the specific staffing levels of selected areas. These colleges would have been the four colleges directly

above and below Tallahassee Community College in terms of FTE enrollment. This year the Institutional Research Office was asked to provide a wider range of comparative information. A survey of the entire community college system was considered, but it was felt not all of the twenty-eight colleges in the system would be able to respond to such a request in a timely manner. The Florida State Board of Community Colleges was contacted concerning the feasibility of obtaining the desired information from reports the individual colleges were already submitting as part of the standard reporting process.

In 1986, the Florida State Board of Community Colleges began the development of a data base that would contain numerous pieces of information on each individual employed by a community college as of a given date for a given year. The data base has undergone extensive review by two groups at each community college. The first group was comprised of persons responsible for submitting reports required by the State Board of Community Colleges. The second consisted of the personnel officers. Both groups have made recommendations that have resulted in modifications in the definition of elements and the addition of new elements. The Personnel Data Base , as the data base is known, has now been in existence long enough to have obtained reasonable stability.

Initial Rankings and Research Questions

The State Board granted Tallahassee Community College's request for system-wide data and developed a spreadsheet containing the majority of the file information from the Fall 1990 submission of the Personnel Data Base. Once these data were received, ratios were developed that consisted of the total number of persons in the Data Base categories divided into the FTE enrollment of the different colleges. These ratios were then ranked from highest -1- to lowest -28- within each personnel category. There was a wide range of ranks across categories for almost all of the twenty-eight colleges in the system. (See Table 1) A totally consistent ranking was not anticipated for any one college. However, the ranks for each college were so inconsistent that this wide range in ranks led to the first research question under consideration in this study:

Is an FTE based ratio the best ratio to use when comparing different types of personnel categories?

Best is defined as the combination of a set of indicators providing the narrowest range of ranks across the categories. A narrow range of ranks was interpreted as indicating that the ratios developed could be used to consistently compare colleges.

Table 1
Ranks Based Upon FTE Ratios

FTE Rank	Activity Code 1	2	4	6	7	8	10
1	9	21	2	12	28	26	26
2	24	15	8	22	7	3	6
3	4	17	6	7	26	20	2
4	7	28	11	8	15	21	3
5	2	12	1	25	2	12	25
6	3	19	16	17	22	25	16
7	19	6	7	20	23	17	7
8	8	16	5	5	16	24	12
9	10	14	9	21	18	7	10
10	17	24	13	23	21	23	21
11	22	3	4	19	9	22	24
12	6	20	12	11	1	28	17
13	14	10	14	4	11	18	4
14	11	11	10	18	3	4	1
15	16	8	17	2	17	10	11
16	1	13	24	3	5	27	13
17	26	4	19	13	8	15	19
18	12	22	22	6	25	9	14
19	23	27	26	28	12	11	22
20	15	26	18	24	6	13	9
21	5	9	25	10	13	5	8
22	13	1	3	16	4	8	27
23	20	23	21	14	20	6	18
24	28	5	28	15	14	1	20
25	25	25	20	1	24	19	23
26	27	18	15	27	10	14	5
27	18	7	27	9	19	16	28
28	21	2	23	26	27	2	15

The table rows are the twenty-eight colleges in the Florida community college system arranged by FTE rank. This rank was based upon the FTE generated for the 1990-91 reporting year. The college with the largest FTE was assigned rank 1.
The table columns labeled numerically represent the activity codes used in the PDB.
The cell entries are the ranks assigned to a college for a given code based upon ratios developed by dividing a college's FTE by the number of employees in that type of employment. Again, the largest value was assigned the rank of 1.

A visual inspection of Table 1 also seemed to indicate that just considering those colleges close to a selected college in terms of FTE might not include the proper set of peer colleges for personnel comparison purposes. This led to the second question under consideration:

Is an FTE based peer group the most appropriate for comparison tracking of personnel categories?

Most appropriate was defined as being close in rank across several Personnel Data Base categories. It was anticipated that there easily could be other factors operating on a college that would make it more like the first one than just FTE.

Activity Codes in the Personnel Data Base

The Personnel Data Base can be viewed as a means of answering these questions because of the previously mentioned stability and because each college in the system submits the report each year. The Personnel Data Base is completed each October based upon the payroll data for the payroll date closest to October 1. Each person on the payroll at that time is classified into one of ten different activity codes.(1) The activity codes are as follows:

1. Executive, Administrative, and Managerial (EAM)
2. Instructional Staff (Faculty)
3. Instructional Department Administrators
4. Librarian/Counselor
5. Teaching Assistant/Associate
6. Specialist/Support Staff
7. Clerical/Secretarial
8. Technical/Paraprofessional
9. Skilled Crafts
10. Service/Maintenance.

While these categories are not detailed enough to make specific departmental level comparisons, they can be used to provide some general ratios for the system as a whole.

As mentioned previously, the method often used for the development of these ratios is to equate different college's staffing levels by dividing these levels into the college's FTE enrollment. One primary advantage of using FTE based ratios is the availability of FTE data for different time frames, including semester-by-semester and longitudinally. Another reason is the prevalence of the use of this indicator in the literature (2). Even non-faculty standards are often based upon FTE ratios (3).

However, the literature was often concerned only with the relationship of faculty to students. This appeared to

leave a gap in staffing comparisons that might be more appropriately filled by other types of ratios. As an example, it seemed logical to assume the custodial worker's ability to complete assigned tasks would be more closely tied to the square footage of the area to be cleaned than to the FTE of the college. Also other areas such as technical may be controlled more by the equipment levels of the colleges than the FTE.

The following investigation of correlations between the number of individuals in different activity codes of the Personnel Data Base and selected indicators was done in an attempt to discover if the correlations would be larger than that of FTE. If so, would the increase in strength be important enough from a practical standpoint to make the consideration of changing to these new indicators worthwhile.

III. Methods

Additional Indicator Development

Any number of additional indicators could have been developed for use in a new set of ratios. It was decided that the most practical set would consist of indicators that were not only representative of conditions at the colleges but also were readily available. The standard reports submitted to the State Board of Community Colleges were scanned and seventeen indicators appearing to match these requirements were identified. The indicators that were different ways of looking at the same aspect of the college were grouped and the entire set is listed below:

A. Full-Time-Equivalent

This set of indicators is based upon the number of credit hours delivered by a community college during the 1990-91 reporting year. In Florida the reporting year consists of summer, fall, and spring terms.

The individual indicators are as follows:

FTE - Total college FTE minus the two non-credit categories of Lifelong Learning and Community Instructional Service
Credit FTE - Sum of Advanced and Professional, the college parallel credit courses, and Postsecondary Vocational, the credit vocational courses
A and P FTE - Advanced and Professional FTE, the college parallel track
PSV FTE - Postsecondary Vocational FTE, college credit vocational track
Coll Prep - College preparatory FTE
Other - Remaining FTE for the various colleges

B. Size of Facilities

The physical size of a college's facilities as defined by the following measures and listed in the 1990 State Board of Community Colleges facilities inventory:

Gross Sq. Ft. - Gross square feet
Assign. Sq. Ft. - Assignable square feet

C. Number of students

The number of students attending a college as opposed to the FTE.

Headcount - Fall 1990 headcount

D. Budget

The revenues reported on the Annual Financial Report for FY 1989-90.

CCPF - Community college program fund, basic state money fund for the community colleges
St. Other - Other funds received from the State
Student Fees - Various fees received from students, mainly tuition and matriculation fees
Local Other - Other funds received from local sources
Budget - Sum of CCPF, St. Other, Student Fees and Local Other

E. Miscellaneous

There were several additional indicators that appeared to be logically related to a particular category. They are

Geo. Region - Geographical region, based upon the DOE five regions
Size - A numerical rating of one to three
Sites - Number of sites with at least one gross square foot of space in the State Board of Community Colleges facilities inventory
Library Vol. - Number of volumes in the college library, Integrated Postsecondary Educational Data System (IPEDS) Part D report for fiscal year 1990

The different aspects were retained during the first part of the study in an effort to determine if a different indicator might yield a higher correlation even though it was not independent of previous indicators.

Correlations and New Rankings

The correlations were calculated using Lotus 1-2-3.

This program does not allow for missing data. The activity codes of 3. Instructional Department Administrator, 5. Teaching Assistant/Associate and 9. Skilled Crafts were not used by all the colleges. Two new categories were developed in order to use the available data in these categories. Codes 3 and 5 were combined with category 2. Faculty and code 9 was combined with category 10 Service/ Maintenance.

Each indicator was paired with each personnel category. The purpose of the investigation was to develop a set of ratios and no attempt was made to develop any type of mathematical model involving anything other than correlations. The correlations between the categories and the various indicators are listed in Table 2. The correlations for the new combined categories closely paralleled those of categories 2 and 10, and they were not used in further work.

The final step in Phase 1 was to develop two new sets of ratios. The first set used the number of persons in each category and the most highly correlated indicator for that category. The second used the indicator that had the highest correlation with the most categories. This indicator was then used as the numerator across all the personnel categories. Once the ratios were calculated, new rankings were developed for each personnel category as they had been for the FTE based ratios. Those rankings are displayed in Tables 3 and 4.

The second research question was addressed using the rankings developed in Tables 3 and 4. The four community colleges that ranked directly above Tallahassee Community College and the four that were directly below for each category were listed. These groups were compared across the eight possible categories to identify those colleges that seemed to be consistently close to Tallahassee Community College in staffing ranks. Five colleges met the criteria of being within four ranks of Tallahassee Community College in at least four of the eight sets of rankings. The five were Florida Community College at Jacksonville, Palm Beach Community College, St. Petersburg Junior College, Seminole Community College, and South Florida Community College. These five were then compared with the eight colleges that were within four ranks based upon FTE alone. These eight colleges were Central Florida Community College, Edison Community College, Hillsborough Community College, Manatee Community College, Okaloosa-Walton Community College, Pensacola Junior College, Santa Fe Community College, and Seminole Community College. (See Table 5.)

IV. Results

The correlations presented in Table 2 indicated that there were large differences in the relationships between the

Table 2
Correlation Coefficients

Indicators	Activity Codes 1	2	2+3+5	4	6	7	8	9+10	10
FTE	.83	.98	.98	.81	.83	.94	.87	.94	.93
Credit FTE	.71	.95	.95	.78	.72	.97	.91	.93	.93
A and P FTE	.71	.94	.94	.78	.72	.96	.90	.93	.92
PSV FTE	.75	.96	.96	.79	.73	.96	.90	.92	.91
Coll Prep	.64	.91	.91	.68	.62	.97	.93	.93	.94
Other	.68	.45	.44	.43	.64	.25	.17	.36	.32
Gross Sq. Ft.	.80	.96	.96	.75	.85	.90	.84	.94	.91
Assign. Sq. Ft.	.80	.94	.94	.76	.85	.87	.80	.90	.87
Headcount	.74	.94	.94	.80	.76	.94	.88	.90	.89
CCPF	.81	.99	.98	.79	.80	.96	.90	.96	.95
St. Other	.80	.98	.98	.77	.78	.96	.89	.95	.93
Student Fees	.72	.96	.96	.76	.72	.98	.92	.95	.95
Local Other	.62	.90	.90	.70	.64	.92	.86	.87	.85
Budget	.90	.99	.98	.80	.84	.98	.93	.96	.96
Geo. Region	.11	.36	.36	.23	.26	.41	.43	.39	.36
Size	.54	.63	.63	.66	.70	.53	.53	.54	.50
Sites	.67	.74	.73	.63	.70	.70	.63	.72	.69
Library Vol.	.73	.89	.88	.75	.79	.84	.73	.83	.80

The cell entries are the simple bivariate correlation between the number of persons in an activity code at each college and the value of the indicator for the same college.

Table 3
Ranks Based Upon Maximum r Values

FTE Rank	Activity Code 1	2	4	6	7	8	10
1	6	17	2	15	28	24	26
2	26	21	8	25	16	3	12
3	4	10	6	12	27	19	1
4	5	7	11	9	13	21	4
5	2	14	1	25	2	16	25
6	3	20	16	20	24	25	18
7	22	4	7	22	25	18	9
8	8	18	5	3	20	26	16
9	10	12	9	21	17	7	10
10	16	23	13	19	21	23	19
11	21	8	4	23	7	22	21
12	7	22	12	13	1	28	23
13	19	13	14	6	15	20	6
14	13	9	10	27	4	4	3
15	17	5	17	2	14	9	11
16	1	15	24	8	9	27	13
17	27	3	19	14	10	15	15
18	18	24	22	7	26	13	20
19	24	28	26	28	12	10	22
20	14	27	18	17	5	12	7
21	9	16	25	11	22	6	17
22	20	25	3	18	11	14	28
23	15	11	21	5	8	5	8
24	28	19	28	10	18	1	24
25	23	26	20	1	19	17	14
26	25	6	15	26	3	8	2
27	12	2	27	4	6	11	27
28	11	1	23	16	23	2	5

The table rows and columns are the same as those in Table 1.
The cell entries are the ranks assigned to a college for a given code based upon ratios developed by dividing the indicator with the highest correlation for that specific activity code by the number of persons employed in the given activity code at the given college.
As in Table 1, the largest value was assigned the rank of 1.

Table 4
Ranks Based Upon Budget Ratios

FTE Rank	Activity Code 1	2	4	6	7	8	10
1	6	17	2	11	28	24	26
2	26	21	9	25	16	3	12
3	4	10	4	7	27	19	1
4	5	7	12	8	13	21	4
5	2	14	1	27	2	16	25
6	3	20	21	16	24	25	18
7	22	4	7	22	25	18	9
8	8	18	5	6	20	26	16
9	10	12	8	23	17	7	10
10	16	23	13	21	21	23	19
11	21	8	3	17	7	22	21
12	7	22	19	13	1	28	23
13	19	13	18	4	15	20	6
14	13	9	10	19	4	4	3
15	17	5	20	2	14	9	11
16	1	15	25	3	9	27	13
17	27	3	22	12	10	15	15
18	18	24	24	9	26	13	20
19	24	28	23	28	12	10	22
20	14	27	17	24	5	12	7
21	9	16	27	14	22	6	17
22	20	25	6	18	11	14	28
23	15	11	16	10	8	5	8
24	28	19	28	15	18	1	24
25	23	26	15	1	19	17	14
26	25	6	11	26	3	8	2
27	12	2	26	5	6	11	27
28	11	1	14	20	23	2	5

The rows and columns are the same as in Table 1.
The cell entries are the ranks assigned to a college for a given code based upon ratios developed by dividing a college's Budget by the number of employees in that type of employment activity. Again, the largest value was assigned the rank of 1.

Table 5
Colleges Within Four Ranks of Tallahassee
Based Upon FTE Ratios

FTE Peers	Activity Code Peers	Activity Code 1	2	4	6	7	8	9	10
			BREV			BREV			
				BROW					BROW
CFLA									
		DAYT							
EDIS			EDIS			EDIS		EDIS	
	FJAX		FJAX	FJAX	FJAX	FJAX	FJAX	FJAX	
							FKEY		
		GULF				GULF			
HILL				HILL	HILL			HILL	
				INDR		INDR			
					LCTY		LCTY		
								LSUM	LSUM
MANA			MANA						
		MIAM						MIAM	
			NFLA						
OKLA		OKLA							
	PALM	PALM	PALM	PALM	PALM		PALM	PALM	
			PASC				PASC		
PENS				PENS					
								POLK	
	STPE	STPE		STPE	STPE		STPE		STPE
SANF					SANF			SANF	
SEMI	SEMI	SEMI	SEMI	SEMI					SEMI
	SFLA	SFLA			SFLA	SFLA	SFLA		
TALL	TALL	TALL	TALL	TALL	TALL	TALL	TALL	TALL	TALL
					VALE				

The cell entries for the numerical columns are the colleges that were within four ranks of the rank assigned TCC for that activity code. These entries are based upon the FTE ratios and ranks developed in Table 1.
The cell entries for column one are the colleges within four ranks of TCC based upon FTE's values alone without any ratios.
The cell entries for column two are the colleges selected for inclusion in the new peer group based upon activity code ranks. (See Results and Discussion sections of text for an explanation of this process.)

different categories and the various groups of indicators. There were also differences for a given indicator across the different personnel categories. This appears to be consistent with the original research hypothesis that there are different factors at work for the various categories. However, when only the highest and second highest correlations for each category are considered, much of the difference disappears. The highest and next highest correlations found between the different categories and indicators are listed below.

1.	EAM	and	Budget / FTE
2.	Faculty	and	Budget / FTE
4.	Librarian/Counselor	and	FTE / Headcount
6.	Specialist/Support Staff	and	Assign Sq. Ft./ Gross Sq. Ft.
7.	Clerical/Secretarial	and	Budget / Student Fees
8.	Technical/Paraprofessional	and	Coll Prep /Budget
10.	Service/Maintenance	and	Budget / Student Fees

The indicator that produced the highest correlation for the most categories was Budget. This was a combination of the Community College Program Fund (CCPF), State Other, Students Fees and Local Other funds. The r values ranged from .80 for Librarian/Counselors to .99 for Faculty.

An inspection of the first two columns of Table 5 indicates that only one college is included in both the original group of FTE based peers and the new group of rank based peers. This would also appear to indicate that more is involved in staffing patterns than FTE alone.

V. Discussion

The underlying premise of this study was that the use of an FTE based ratio as a method of comparing different types of employment levels was not the best measure for all categories of employment found in a community colleges. The advent of the Personnel Data Base provided a means of investigating this premise. The correlation between a college's FTE and the number of individuals in the various staff categories of the Personnel Data Base indicate that the use of the FTE/Staff ratios does not provide a consistent ranking across all activity codes. However, the correlations exhibited by FTE, ranging from a low of .81 for Librarian/Counselors to a high of .98 for Faculty, indicate it is strongly related to all phases of the college.

The use of the other indicators produced a new set of r values that ranged from a low of .81 to a high of .98. The

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new indicator that produced the greatest number of high r values was Budget. The greatest improvement was found in the Technical/Paraprofessional category. The r value for FTE was .87 while that for Budget was .93.

Based upon the relatively small amount of improvement in r gained from using different indicators for different categories and the lack of improvement in narrowing of the ranks as exhibited by Table 3 and Table 4, the extra time and effort involved in developing a complex set of ratios does not appear to be of practical importance. The common use of FTE ratios seems to be justified, unless there is a movement to replace FTE with Budget.

The new sets of rankings displayed in Tables 3 and 4 indicated that the other indicators used in this study did not yield any significant narrowing of ranks across the ten employment categories used in the Personnel Data Base. These results led to an attempt to develop a new set of peer colleges that could be more closely tracked for staffing comparison purposes. This new set was developed based upon membership in the group of colleges within four ranks of Tallahassee Community College. Since Tallahassee Community College was above rank five in several categories, not each activity code group contained eight additional colleges. As Table 5 shows, there was a variety of colleges within four ranks of Tallahassee Community College over the entire set of activity codes. This variety was narrowed by requiring that a college be in the group for at least four activity codes in order to be in the final peer set. This process resulted in a new peer group of five colleges that were close to Tallahassee Community College in rank for at least four of the eight possible codes. A visual inspection of the new peer group seems to indicate similarities in population size of host cities and in proximity to universities. This new group will be tracked for the next several years via the Personnel Data Base in an attempt to discover if this similarity in rankings continues or if the relative positions change frequently.

VI. Conclusions

The initial rankings based upon the FTE ratios and correlations between the various activity codes and the newly defined indicators indicated that FTE is not consistently related to all ten activity codes used in the Personnel Data Base. However, the change in correlation resulting from the use of either the most highly correlated indicator for each category or the use of the most highly correlated indicator overall was not of practical importance. The development of a complex set of indicators does not appear to be justified based upon these results.

The consideration of a different group of peer colleges for staffing comparisons does appear to be justified. This new set was defined to contain those colleges within four ranks of Tallahassee Community College for at least four of the activity codes contained in the Personnel Data Base. This new set of peer colleges will be tracked over time in order to determine the stability of the observed relationships.

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